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## SOME OBSERVATIONS OF AURORAE AT MOUNT HAMILTON

It is seldom that the people of central California see an aurora. In fact, the phenomenon is unknown to essentially all who have lived only in this part of the world. The month of November, 1893, at Mount Hamilton, was marked by the presence of aurorae on several nights, tho they could not be called bright ones in comparison with those visible in the high latitudes of North America and Europe. A few additional aurorae were observed in the winter of 1893-4, mostly as low faint arches in the north; their upper borders were usually less than  $12^\circ$  above the horizon. Similar very faint illuminations of the northern sky were observed a few times in the following twenty-four years, but after November, 1893, I do not recall seeing an aurora bright enough to be noticed by people in general until early in August, 1917; however, it is possible that a few such did occur.

Altho aurorae are so seldom visible from Mount Hamilton, it seems certain that the sky is completely covered with faint auroral light at all times. In 1893, I was led to conclude that the green line in the auroral spectrum may be seen on any dark clear night in any part of the sky. I confirmed this on several nights in 1893, 1894 and 1895\*, again in 1908\*\*, and at other times. In fact, I never failed to see the green line *easily* when I looked for it.

On the night of 1893 November 7 I measured the wave-length of the green line, using the original Brashear visual spectroscope (unattached to a telescope), whose optical constants were: collimator lens, focal length 20.6 inches, aperture stopped down to 1.05 inches; dense flint  $60^\circ$  prism; view telescope, focal length 10.5 inches; eyepiece, focal length 1 inch. The prism was in minimum deviation for 5570Å. The angular dispersion at 5570Å was 1 angstrom =  $5''$ .

As the aurora line was very faint, just bright enough to permit of measurement with a wide slit and a magnifying power of 10, the measures were necessarily not very accurate. The measures were made with reference to the lead line at 5609.1Å. The average value of a revolution of the micrometer screw for the interval 5609-5570 was 39.5Å. The mean value of the wave-length of the green line from 19 measures made between 12<sup>h</sup> 30<sup>m</sup> and 14<sup>h</sup> 35<sup>m</sup> (mean time) is 5571.6Å. The 19 individual measures give results

\**Astrophysical Journal*, 2, 162, 1895.

\*\**Lick Observatory Bulletin*, 5, 46-7, 1908.

ranging from 5563 to 5580A. As the mean value, 5571.6A, agreed well with the results obtained by Vogel (5572), Copeland (5573), Huggins (5571), and other experienced observers, and as there was no promise that measures made on our faint aurorae could compare in value with those made by astronomers who are favored with brilliant aurorae, I did not pursue the subject further. We possessed no adequate spectrograph at that time.

August 30, 1917.

W. W. CAMPBELL.

#### A REMARKABLE COINCIDENCE\*

The most remarkable coincidence known to me relates to the discovery of Perrine's second comet. I published the facts in the case in *The Observatory*, Vol. 26, pp. 293-4, 1903, where they were made familiar to many astronomers. On describing the coincidence recently to a group of my colleagues in other sciences they urged strongly that I republish the facts in a journal of more general character, and thus make known the occurrence to students in other subjects.

Professor Charles D. Perrine of the Lick Observatory staff discovered the first of his many comets on November 17, 1895. This was Comet *c* 1895. He observed it night after night until December 20, 1895, when it was lost to sight in the glare of the Sun's rays. The orbit of the comet was accurately determined, and its path for the early months of 1896 was computed and published in advance. I had the pleasure of assisting Mr. Perrine when he first looked for its reappearance from behind the Sun, on the morning (just before dawn) of January 30, 1896. He found it at once, in the predicted position, and as an object easily visible in medium-sized telescopes. Because the comet was following its predicted path so closely we decided not to squander money in cabling the fact of its reobservation to European observers. Perrine observed his comet morning after morning as weather permitted, for fifteen days, until on February 14 a cablegram was received from Kiel, Germany, announcing that Lamp had re-observed Perrine's Comet *c* 1895 that morning. The cablegram in cipher code was received at the Lick Observatory by one of the astronomers, in perfect order as shown by the control word; but in converting the cabled right ascension of the comet from degrees and minutes of arc into hours and minutes of time the translator made an error

\*Reprinted from *Science*, July 13, 1917.